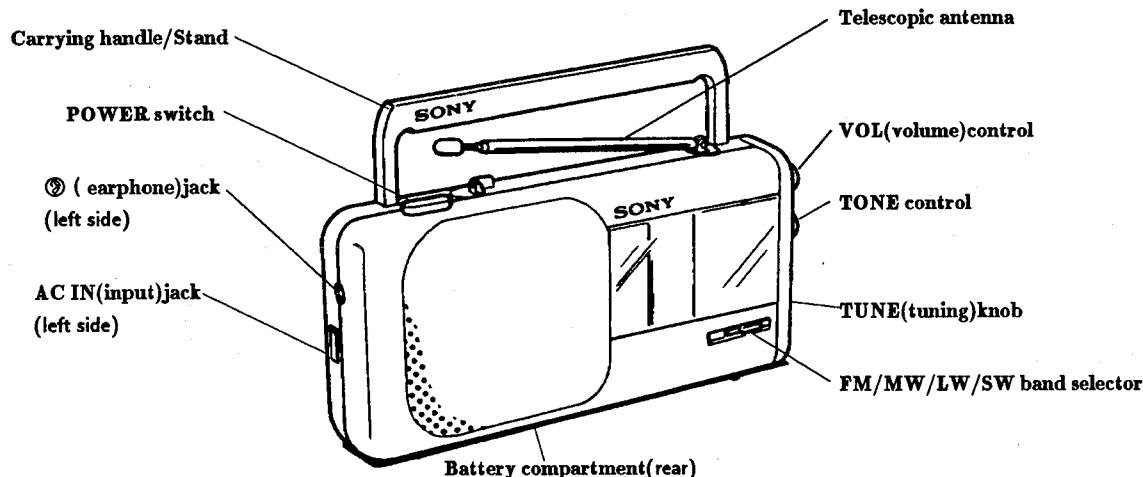


ICF-860L

SERVICE MANUAL

West Germany Model



- ICF-860L is almost the same as ICF-850L (G-AEP Model).

(G-AEP shows West Germany.)

Refer to ICF-850L Service Manual previously issued
for the information of this set.

- Only following parts differ from those in ICF-850L.

No.	Part No.	Description
3	3-898-918-31	KNOB, BAND
15	3-898-915-11	KNOB, POWER
25	3-898-930-51	CASE, REAR
30	3-898-928-21	CASE, SIDE
31	*3-898-904-21	PLATE, BACK
33	3-898-922-41	POINTER

ELECTRICAL PARTS

Ref.No.	Part No.	Description
902	*A-3615-303-A	PC BOARD ASSY, MAIN
SP 1	1-503-847-21	SPEAKER

ACCESSORY & PACKING MATERIAL

3-750-613-41	MANUAL, INSTRUCTION
3-902-105-01	INDIVIDUAL CARTON

- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

FM/MW/LW/SW 4BAND RECEIVER

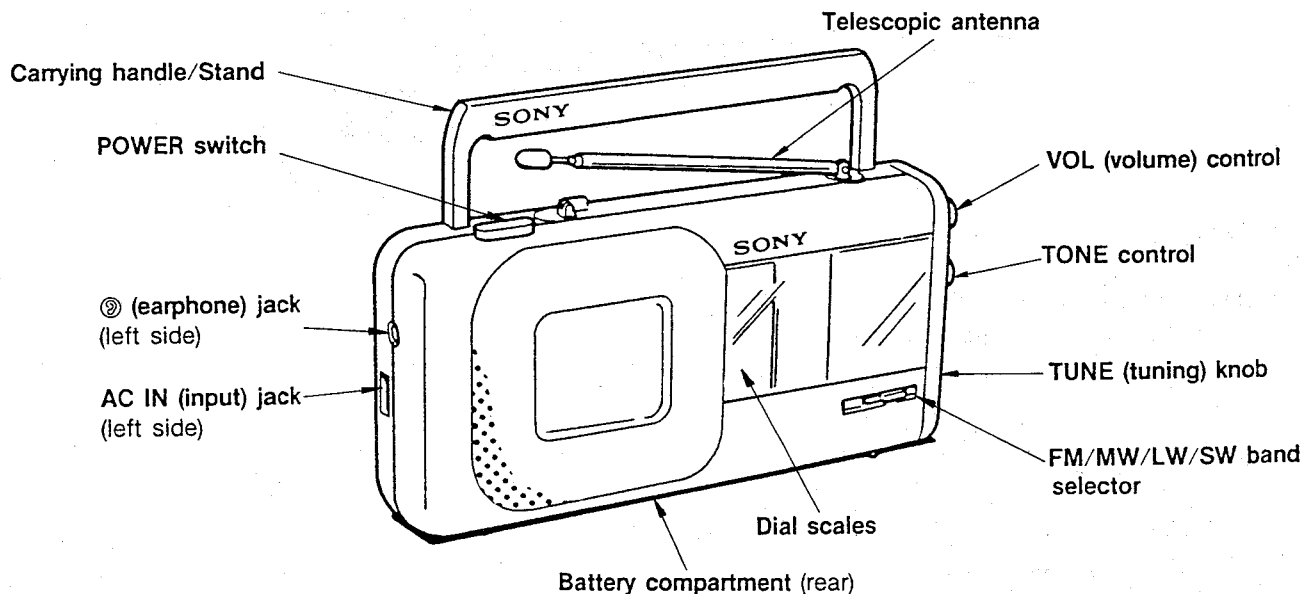
SONY®

ICF-850L

AR22

SERVICE MANUAL

AEP Model
UK Model



SPECIFICATIONS

Frequency range	FM: 87.6–107 MHz (model for West Germany) 87.6–108 MHz (model for other countries) MW: 530–1,605 kHz LW: 150–255 kHz SW: 5.95–18 MHz
Antennas	FM/SW: Telescopic antenna MW/LW: Built-in ferrite rod antenna
Speaker	Approx. 9.2 cm (3 ⁵ / ₈ inches) dia., 8 Ω
Power output	500 mW (at 10% harmonic distortion)
Output	Earphone jack (minijack)
Power requirements	240 V (UK model) or 220 V (model for other countries) AC, 50 Hz with the supplied AC power cord 6 V DC with four R6 (size AA) batteries
Battery life	Approx. 37 hours of listening (for four hours a day at a normal volume) using Sony battery SUM-3(NS)
Dimensions	Approx. 263 × 128 × 56.5 mm (w/h/d) (10 ³ / ₈ × 5 ¹ / ₈ × 2 ¹ / ₄ inches) incl. projecting parts and controls with the carrying handle pushed in.
Weight	Approx. 836 g (1 lb 13 ¹ / ₂ oz) incl. batteries
Supplied accessory	AC power cord (1)

FEATURES

- Two different power sources: batteries and house current.
- TONE control facilitates fine tone adjustment.
- Fast tuning to key stations marked on the MW and LW dial scales.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

FM/MW/LW/SW 4BAND RECEIVER
SONY®

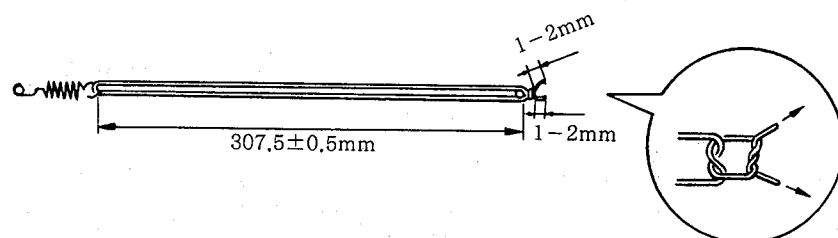


TR

SECTION 1 DISASSEMBLY

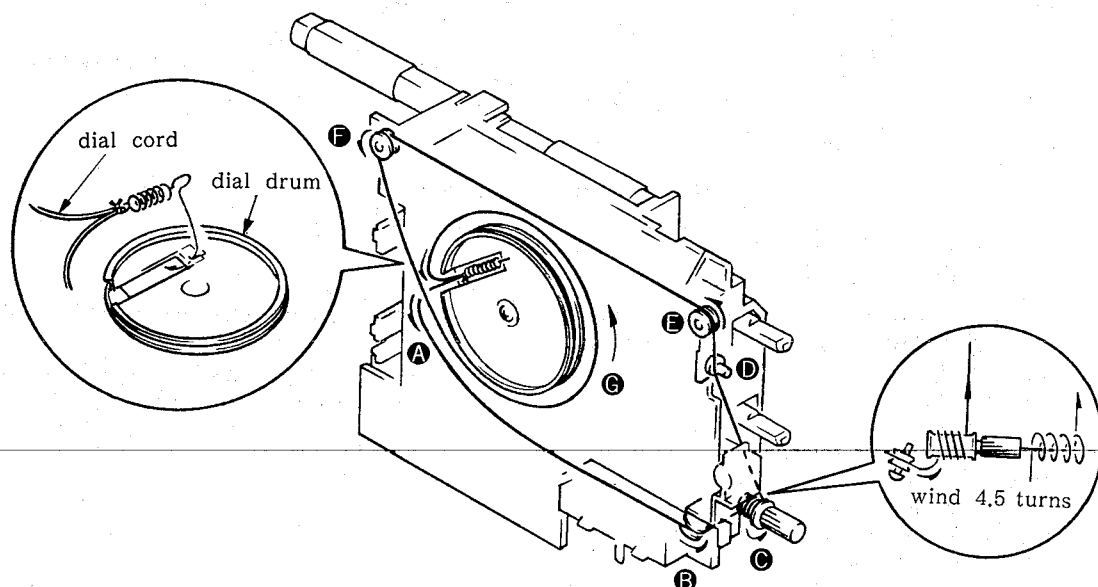
DIAL CORD STRINGING

1. Preparation



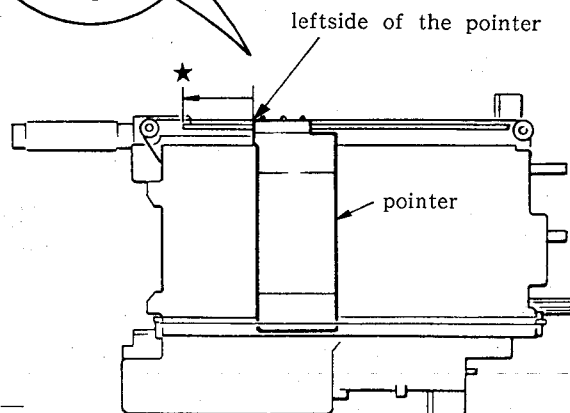
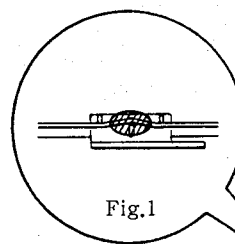
2. Stringing

- 1) Turn the dial drum fully counterclockwise.
- 2) Hook the spring to the dial drum. String the dial cord in the numerical order given.



3. Dial Pointer Installation

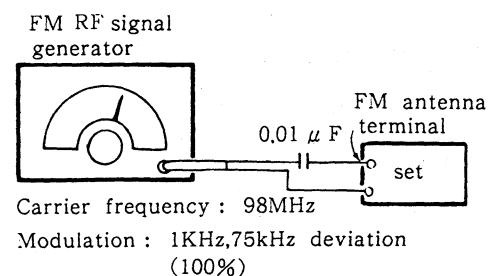
- 1) Turn the tuning knob fully counterclockwise.
- 2) Set the pointer.
- 3) Set the leftside of the pointer to ★ mark.
- 4) Secure the portion ② of the pointer with locking compound after setting the pointer (see Fig.1).



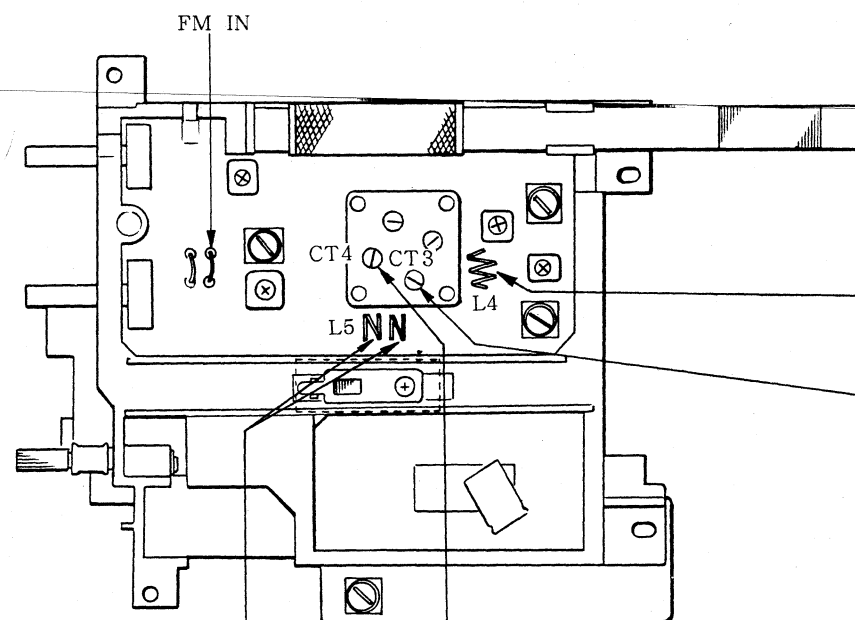
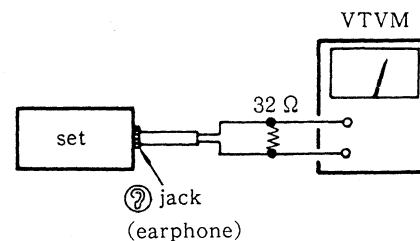
SECTION 2 ELECTRICAL ADJUSTMENTS

FM

BAND switch : FM



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.



FM FREQUENCY COVERAGE ADJUSTMENT

Adjust for a maximum reading on VTVM.

L4	86.5MHz
	*87.35MHz
CT3	109.5MHz
	*107.8MHz

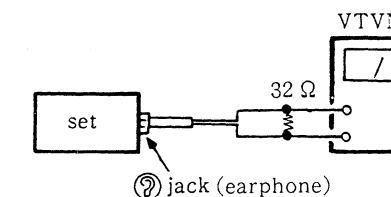
*G-AEP model

L5	CT4
86.5MHz	109.5MHz
*87.35MHz	*107.8MHz
Adjust for a maximum reading on VTVM.	
FM TRACKING ADJUSTMENT	

*G-AEP model

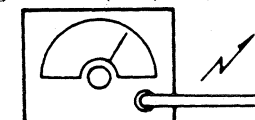
MW/LW/SW

BAND switch : MW (when MW adjustments)
LW (when LW adjustments)
SW (when SW adjustments)



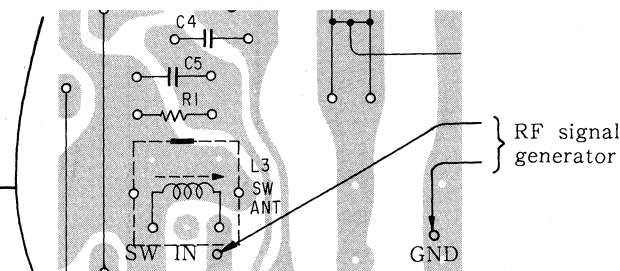
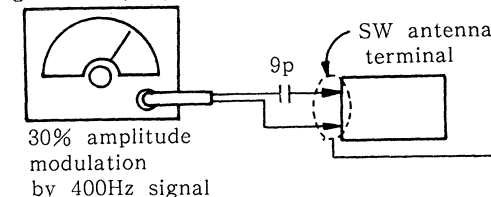
Note : LW adjustment should be made after making MW adjustments. (*1)

AM RF signal generator (MW, LW)



30% amplitude modulation by 400Hz signal

AM RF signal generator (SW)



*1

LW TRACKING ADJUSTMENT

Adjust for a maximum reading on VTVM.

240kHz	160kHz
CT5	L2

MW TRACKING ADJUSTMENT

Adjust for a maximum reading on VTVM.

1400kHz	620kHz
CT1	L1

MW FREQUENCY COVERAGE ADJUSTMENT

Adjust for a maximum reading on VTVM.

CT2	1650kHz
L6	520kHz

SW FREQUENCY COVERAGE ADJUSTMENT

Adjust for a maximum reading on VTVM.

CT7	18.5MHz
L7	5.8MHz

*1

LW FREQUENCY COVERAGE ADJUSTMENT

Adjust for a maximum reading on VTVM.

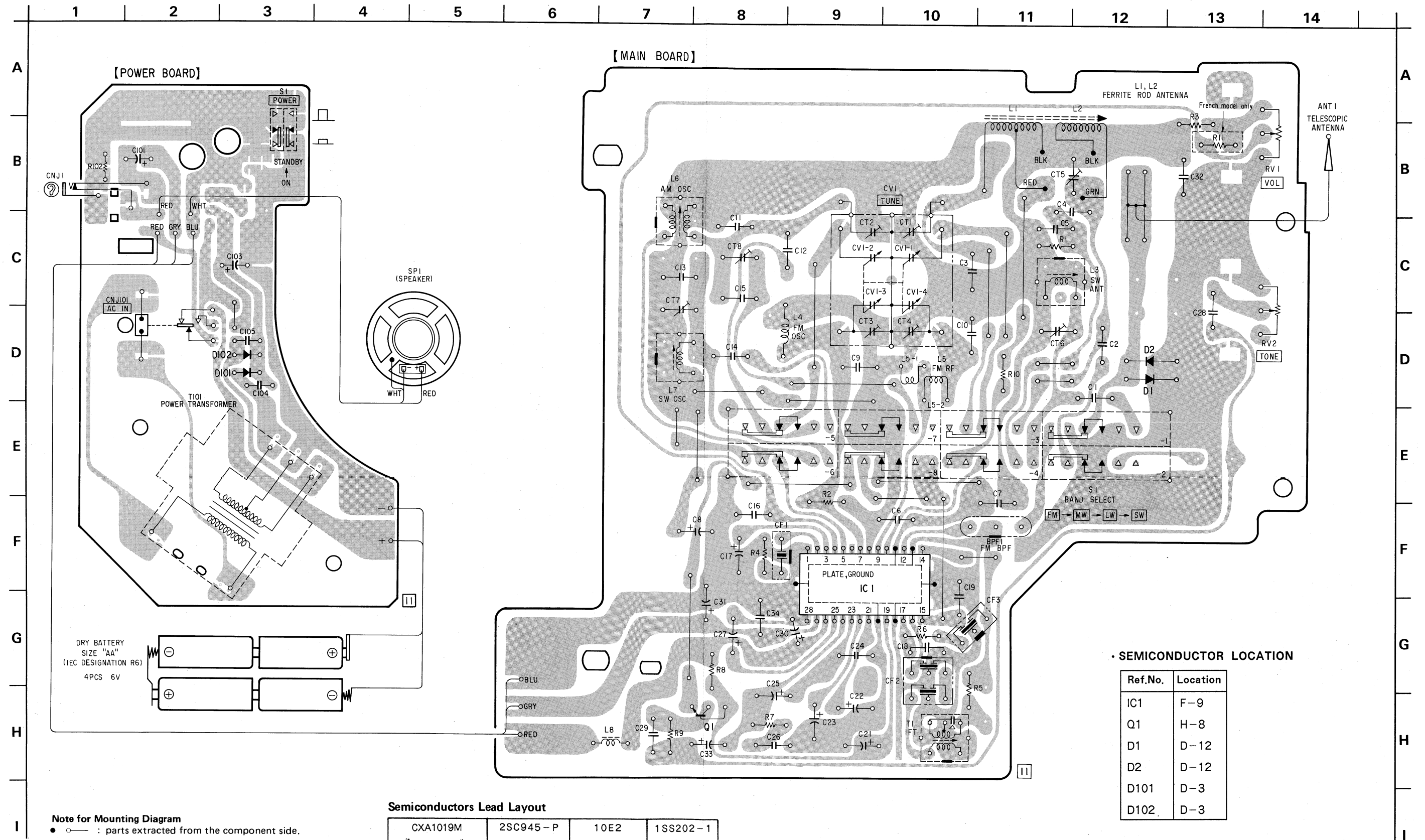
CT8	260kHz
-----	--------

455kHz	T1
Adjust for a maximum reading on VTVM.	
AM TRACKING ADJUSTMENT	

CT6	L3
18.5MHz	5.8MHz
Adjust for a maximum reading on VTVM.	
SW TRACKING ADJUSTMENT	

SECTION 3
DIAGRAMS

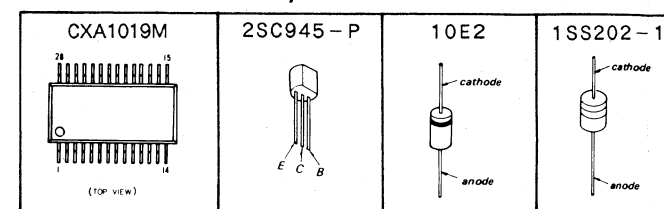
3-1. MOUNTING DIAGRAM



Note for Mounting Diagram

- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : part mounted on the conductor side.
- : indicates side identified with part number.

Semiconductors Lead Layout



SECTION 4 EXPLODED VIEWS

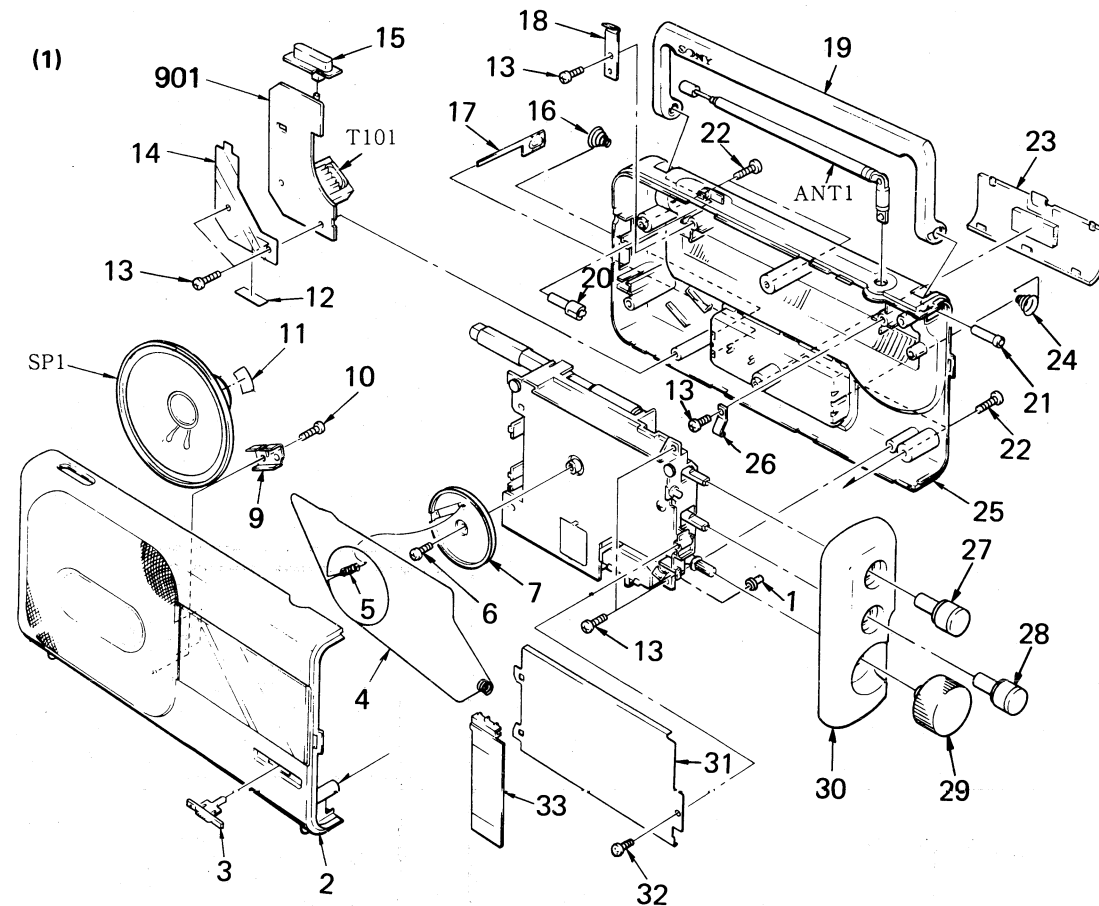
NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

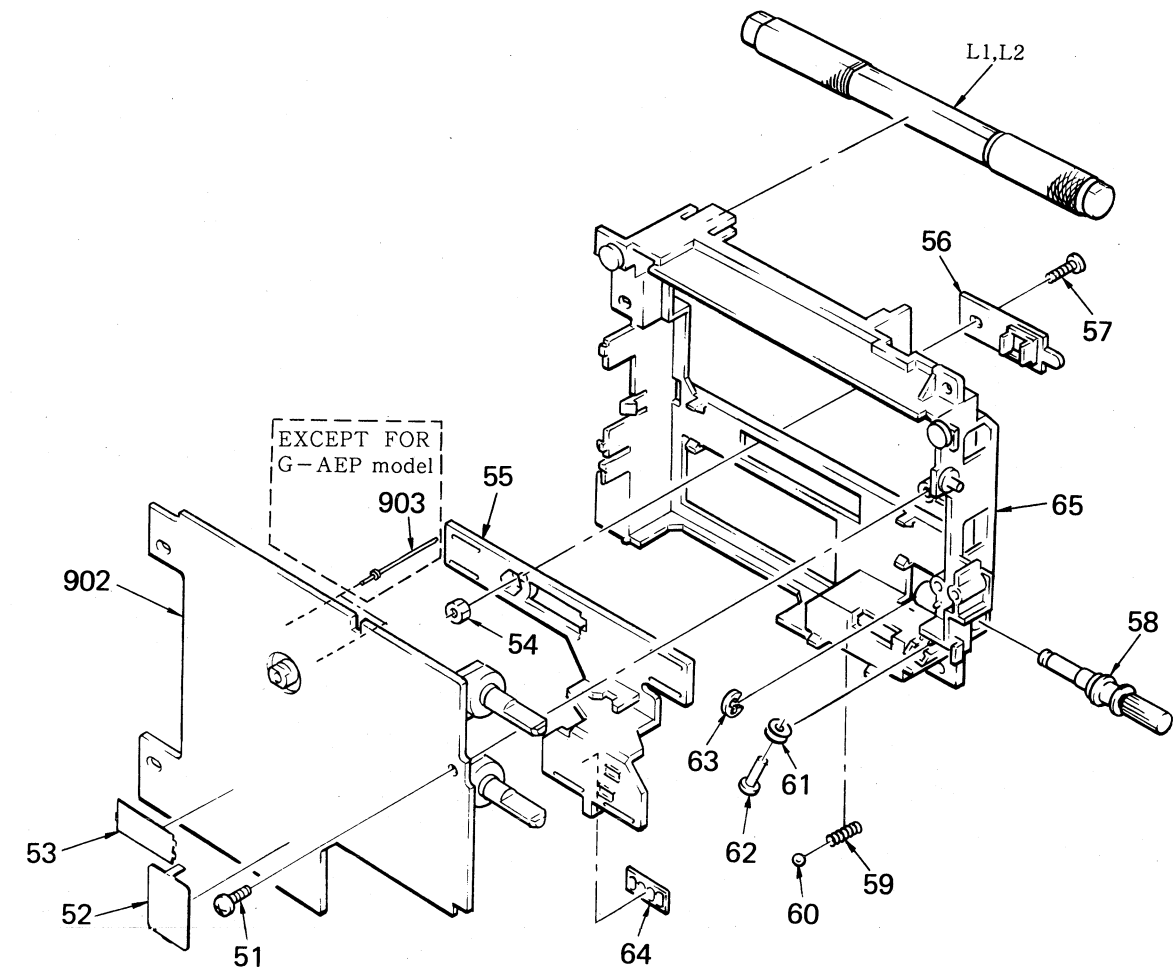
- The construction parts of an assembled part are indicated with a collation number in the remark column.

Color Indication of Appearance Parts
Example: (RED) KNOB, BALANCE (WHITE)
Cabinet's Color Parts' Color

The components identified by shading and mark  are critical for safety. Replace only with part number specified.



(2)



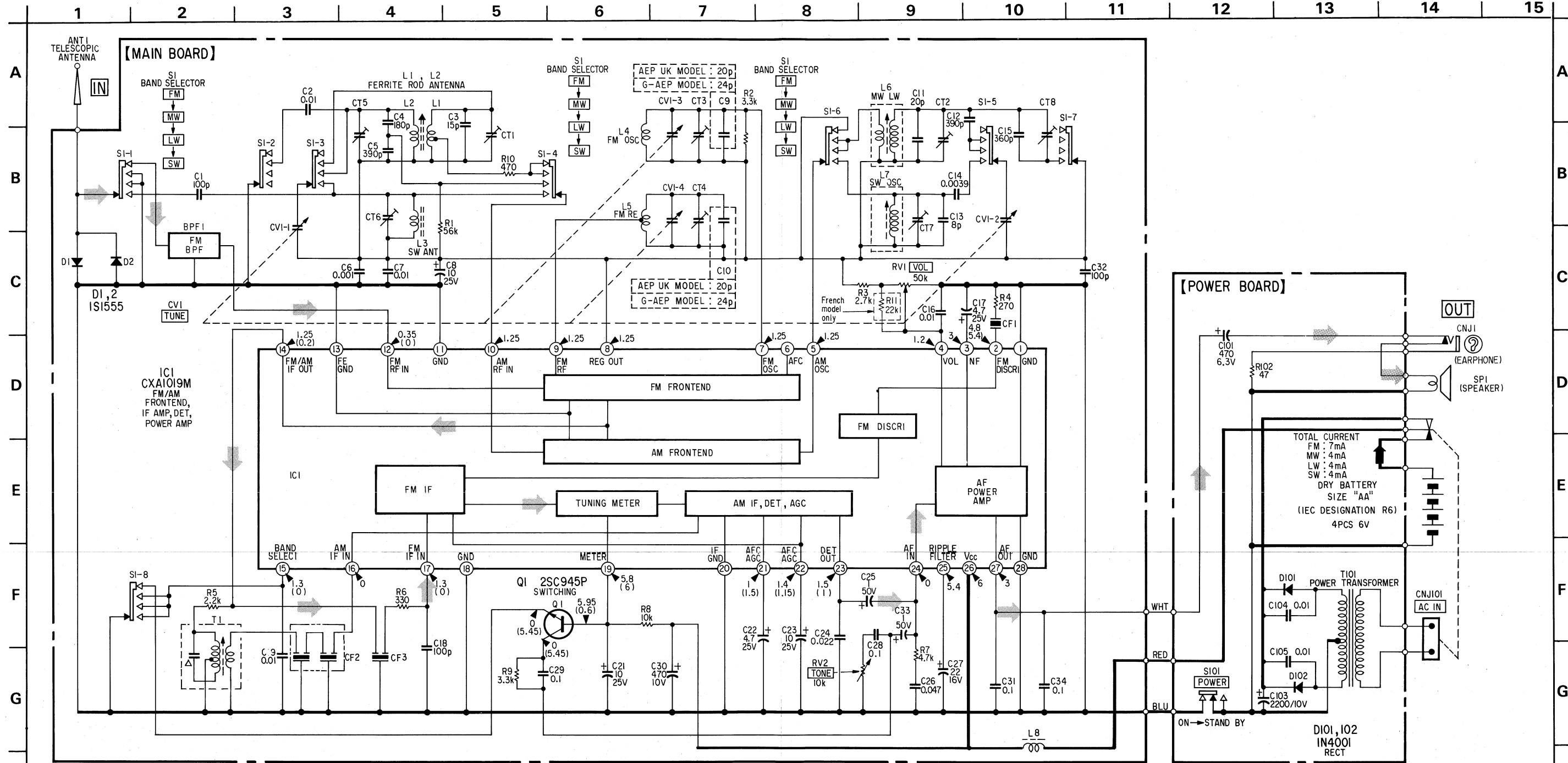
No.	Part No.	Description	Remarks
1	7-623-605-01	EYELET, 1.3X2.5	
2	X-3898-905-1	(UK:WHITE).....CASE (FRONT) ASSY	
	X-3898-905-2	(UK:GRAY).....CASE (FRONT) ASSY	
	X-3898-905-3	(UK:BLACK).....CASE (FRONT) ASSY	
	X-3898-908-1	(AEP,FRENCH:WHITE)...CASE (FRONT) ASSY	
	X-3898-908-2	(AEP,FRENCH:GRAY)...CASE (FRONT) ASSY	
	X-3898-908-3	(AEP,FRENCH:BLACK)...CASE (FRONT) ASSY	
	X-3898-909-1	(G-AEP:WHITE)...CASE (FRONT) ASSY	
	X-3898-909-2	(G-AEP:GRAY)...CASE (FRONT) ASSY	
	X-3898-909-3	(G-AEP:BLACK)...CASE (FRONT) ASSY	
3	3-898-918-01	(WHITE)...KNOB, BAND (WHITE)	
	3-898-918-11	(BLACK,GRAY)...KNOB, BAND (GRAY)	
4	9-911-825-32	STRING, TETRON DIAL (0.3)	
5	3-891-903-00	SPRING, TENSION	
6	7-621-775-10	SCREW +B 2.6X4	
7	*3-898-924-01	DRUM, VC	
9	3-898-949-01	SPEAKER CLAMP	
10	7-685-647-79	SCREW +P 3X10 TYPE2 NON-SLIT	
11	3-898-518-01	CUSHION	
12	3-831-441-XX	(UK)...SPACER	
13	7-685-648-79	SCREW +P 3X12 TYPE2 NON-SLIT	
14	*3-898-950-01	SHEET, INSULATING	
15	3-898-915-01	KNOB, POWER	
16	3-898-908-01	SPRING	
17	3-898-907-01	TERMINAL, PLUS	

No.	Part No.	Description	Remarks
18	*3-898-909-01	SPRING	
19	3-898-923-01	HANDLE	
20	3-898-906-01	SHAFT (L), HANDLE	
21	3-898-921-01	SHAFT (R), HANDLE	
22	7-685-650-79	SCREW +P 3X16 TYPE2 NON-SLIT	
23	X-3898-903-1	LID ASSY, BATTERY CASE	
24	3-896-450-01	SPRING	
25	3-898-930-01	(UK).....CASE (REAR)	
	3-898-930-11	(AEP,G-AEP,FRENCH)...CASE (REAR)	
26	3-898-901-01	PLATE, CLICK	
27	X-3898-901-1	KNOB ASSY (VOL), CONTROL	
28	X-3898-902-1	KNOB ASSY (TONE), CONTROL	
29	3-898-919-01	KNOB, TUNING	
30	3-898-928-01	CASE, SIDE	
31	3-898-904-01	PLATE, BACK	
32	7-685-133-19	SCREW +P 2.6X6 TYPE2 SLIT	
33	3-898-922-11	(AEP,G-AEP,FRENCH)...POINTER	
	3-898-922-01	(UK).....POINTER	
901	*1-623-031-11	PC BOARD, POWER	
ANT1	1-501-222-51	ANTENNA, TELESCOPIC	
SP1	1-503-847-11	SPEAKER	
T101	A.1-448-974-11	(AEP,G-AEP,FRENCH)...TRANSFORMER, POWER	
T101	A.1-448-975-11	(UK).....TRANSFORMER, POWER	

No.	Part No.	Description	Remarks
51	7-685-647-79	SCREW +P 3X10 TYPE2 NON-SLIT	
52	*3-898-902-01	PLATE, SHIELD	
53	3-892-935-11	PLATE, GROUND	
54	7-622-207-05	N 2.6, TYPE 2	
55	*3-898-927-01	SLIDER	
56	*3-898-914-01	ADJUSTOR	
57	7-621-773-95	SCREW +B 2.6X6	
58	*3-898-912-01	SHAFT, TUNING	
59	3-898-910-01	SPRING, COMPRESSION	
60	7-671-112-11	BALL, STEEL	

No.	Part No.	Description	Remarks
61	3-881-911-00	PULLEY	
62	7-625-712-40	RIVET 2X5	
63	7-624-106-04	STOP RING 3.0, TYPE -E	
64	*3-898-911-01	PLATE, CLICK	
65	X-3898-904-1	CHASSIS ASSY	
902	*A-3615-167-A	(AEP,UK)...PC BOARD ASSY, MAIN	
	*A-3615-188-A	(G-AEP)...PC BOARD ASSY, MAIN	
	*A-3615-196-A	(FRENCH)...PC BOARD ASSY, MAIN	
903	*1-535-650-11	(EXCEPT FOR G-AEP)...TERMINAL	
L1,2	1-402-299-11	ANTENNA, FERRITE-ROD (LW/MW)	

3-2. SCHEMATIC DIAGRAM



Note for Schematic Diagram

- All capacitors are in μF unless otherwise noted.
pF: μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
-  : signal path.
-  : internal component.
- **Switch**

- Voltages are dc with respect to ground unless otherwise noted.
 - Readings are taken under no-signal (detuned) conditions with a VOM (50k Ω /V).
 - Voltage variations may be noted due to normal production tolerances.
- no-mark: FM
() : MW LW SW

Ref. No.	Switch	Position
S1	POWER	ON
S101	BAND SELECT	FM

Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

SECTION 5

ELECTRICAL PARTS LIST

NOTE:

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

MF:μF, PF:μF.

RESISTORS

- All resistors are in ohms.
- F : nonflammable

COILS

• MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:

UA...: μA..., UPA...: μPA..., UPC...: μPC,

UPD...: μPD...

The components identified by shading and mark are critical for safety. Replace only with part number specified.

ELECTRICAL PARTS

Ref.No.	Part No.	Description
901	*1-623-031-11	PC BOARD, POWER
902	*A-3615-167-A	(AEP,UK)...PC BOARD ASSY, MAIN
	*A-3615-188-A	(G-AEP)...PC BOARD ASSY, MAIN
	*A-3615-196-A	(FRENCH)...PC BOARD ASSY, MAIN
903	*1-535-650-11	(EXCEPT FOR G-AEP)...TERMINAL
ANT1	1-501-222-51	ANTENNA, TELESCOPIC
BPF1	1-235-171-00	(AEP,UK,FRENCH)...FILTER, BAND PASS
BPF1	1-235-911-21	(G-AEP).....FILTER, BAND PASS
C1	1-102-973-00	CERAMIC 100PF 10% 50V
C2	1-161-013-00	CERAMIC 0.01MF 10% 25V
C3	1-102-951-00	CERAMIC 15PF 10% 50V
C4	1-102-976-00	CERAMIC 180PF 10% 50V
C5	1-102-821-21	CERAMIC 390PF 10% 50V
C6	1-161-039-00	CERAMIC 0.001MF 10% 25V
C7	1-161-013-00	CERAMIC 0.01MF 10% 25V
C8	1-123-356-00	ELECT 10MF 20% 25V
C9	1-102-958-00	(AEP,UK,FRENCH)... CERAMIC 20PF 5% 50V
C9	1-102-960-00	(G-AEP)... CERAMIC 24PF 5% 50V
C10	1-102-958-00	(AEP,UK,FRENCH)... CERAMIC 20PF 5% 50V
C10	1-102-960-00	(G-AEP)... CERAMIC 24PF 5% 50V
C11	1-102-801-00	POLYSTYRENE 20PF 5% 50V
C12	1-104-067-00	POLYSTYRENE 390PF 5% 50V
C13	1-102-241-00	CERAMIC 8PF 0.5PF 50V
C14	1-104-091-00	POLYSTYRENE 0.0039MF 5% 50V
C15	1-104-065-00	POLYSTYRENE 330PF 5% 50V
C16	1-161-013-00	CERAMIC 0.01MF 10% 25V
C17	1-123-369-00	ELECT 4.7MF 20% 25V
C18	1-102-973-00	CERAMIC 100PF 10% 50V
C19	1-161-013-00	CERAMIC 0.01MF 10% 25V
C21	1-123-356-00	ELECT 10MF 20% 25V
C22	1-123-369-00	ELECT 4.7MF 20% 25V
C23	1-123-356-00	ELECT 10MF 20% 25V
C24	1-161-055-00	CERAMIC 0.022MF 10% 25V
C25	1-124-499-11	ELECT 1MF 20% 50V
C26	1-161-021-11	CERAMIC 0.047MF 10% 25V
C27	1-123-330-00	ELECT 22MF 20% 16V
C28	1-162-851-11	CERAMIC 0.1MF 20% 16V
C29	1-162-851-11	CERAMIC 0.1MF 20% 16V
C30	1-124-472-11	ELECT 470MF 20% 10V
C31	1-162-851-11	CERAMIC 0.1MF 20% 16V
C32	1-102-973-00	CERAMIC 100PF 10% 50V
C33	1-124-499-11	ELECT 1MF 20% 50V
C34	1-162-851-11	CERAMIC 0.1MF 20% 16V
C35	1-102-973-00	CERAMIC 100PF 10% 50V
C36	1-101-001-00	CERAMIC 0.001MF 50V
C101	1-124-472-11	ELECT 470MF 20% 6.3V
C103	1-124-893-11	ELECT 2200MF 20% 10V
C104	1-101-004-00	CERAMIC 0.01MF 50V
C105	1-101-004-00	CERAMIC 0.01MF 50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description
CF1	1-567-166-00	FILTER, CERAMIC
CF2	1-567-670-11	FILTER, CERAMIC
CF3	1-567-166-00	FILTER, CERAMIC
CNJ1	1-563-836-21	JACK (EARPHONE)
CNJ101	1-526-838-11	INLET, AC 2P
CT5	1-141-245-00	CAP, VAR, TRIMMER
CT6	1-141-364-11	CAP, VAR, TRIMMER
CT7	1-141-364-11	CAP, VAR, TRIMMER
CT8	1-141-245-00	CAP, VAR, TRIMMER
CV1	1-151-572-11	CAP, VAR, POLYETHYLENE
D1	8-719-107-94	DIODE 1SS202-1
D2	8-719-107-94	DIODE 1SS202-1
D101	8-719-200-02	DIODE 10E2
D102	8-719-200-02	DIODE 10E2
IC1	8-752-030-15	IC CXA1019M
L1,2	1-402-299-11	ANTENNA, FERRITE-ROD (LW/MW)
L3	1-402-073-11	COIL, ANT (SW)
L4	*1-422-294-11	(AEP,UK,FRENCH)...COIL, AIR-CORE
L4	*1-459-789-11	(G-AEP).....COIL, WITH CORE
L5	1-422-349-11	COIL, AIR-CORE
L6	1-406-092-11	COIL, OSC (MW)
L7	1-406-093-11	COIL, OSC (SW)
L8	1-421-659-11	COIL, CHOKE 20UH
Q1	8-729-600-27	TRANSISTOR 2SC634SP
R1	1-249-438-11	CARBON 56K 5% 1/4W
R2	1-249-423-11	CARBON 3.3K 5% 1/4W
R3	1-249-422-11	CARBON 2.7K 5% 1/4W
R4	1-249-410-11	CARBON 270 5% 1/4W
R5	1-249-421-11	CARBON 2.2K 5% 1/4W
R6	1-249-411-11	CARBON 330 5% 1/4W
R7	1-249-425-11	CARBON 4.7K 5% 1/4W
R8	1-249-429-11	CARBON 10K 5% 1/4W
R9	1-249-423-11	CARBON 3.3K 5% 1/4W
R10	1-249-413-11	CARBON 470 5% 1/4W
R11	1-249-433-11	(FRENCH)..... CARBON 22K 5% 1/4W
R102	1-249-401-11	CARBON 47 5% 1/4W
RV1	1-237-793-11	RES, VAR, CARBON 50K (VOL)
RV2	1-237-794-11	RES, VAR, CARBON 10K (TONE)
S1	1-571-172-11	SWITCH, SLIDE (BAND SELECT)
S101	1-572-042-11	SWITCH PUSH (POWER)
SP1	1-503-847-11	SPEAKER
T1	1-404-341-00	TRANSFORMER, IF
T101	A.1-448-974-11	(AEP,G-AEP,FRENCH)...TRANSFORMER, POWER
T101	A.1-448-975-11	(UK).....TRANSFORMER, POWER